since its separation, on the north, from the rest of the Philippines, so that these genera have not flowed over into Mindoro and Luzon. In addition to these apparently late arrivals from Borneo, the sub-province possesses a large number of peculiarly Philippine birds and mammals, which show it to be an integral part of the province.

The rest of the Philippines would seem to have received their Malayan fauna at another time, and by the other way of Sulu and Mindanao. They possess the mammalian genera, *Galeopithecus*, *Tarsius*, and *Cervus*, which are apparently wanting in the western sub-province, and the genera *Macacus*, *Sus*, *Viverra*, *Paradoxurus*, and *Sciurus* in common with it. Of birds, the genera *Loriculus*, *Cyclopsitta*, *Buceros*, and *Penelopides* are examples of forms which are more or less generally distributed over the archipelago outside of the western sub-province.

The grounds for dividing the Philippines east of Paragua into sub-provinces are, to a great extent, based upon species, and especially upon the existence in each of representative forms of the genera *Loriculus*, *Buceros*, *Penelopides*, *Pitta*, *Chrysocolaptes*, *Dicæum*, *Cinnyris*, &c. The hornbills form perhaps the most striking example of this distribution of representative species. Of the eleven species of hornbills obtained in the islands, the western sub-province has one, the southern three, the central two, the eastern two, Mindoro one, and the northern sub-province two, and we have found no case of a single species occupying more than one sub-province, or of more than one species of a genus in a single sub-province. The genus *Chrysocolaptes* of woodpeckers is also noticeable, each sub-province possessing its own species, with the exception of Mindoro, which lacks the genus altogether. The genus *Loriculus* of the parrots is of the same character. Of other animals than birds, the genus *Sciurus* of mammals, and *Draco*, the flying lizards, seem to have representative species in each sub-province, and the land-mollusks are probably distributed in the same way.

The above examples are a few that come to mind before a careful study of our collections has been made, and they do not by any means show all the reasons for the conclusions arrived at. These are the results rather of the general observations of five careful men who have been collecting and studying in the Philippines during the last year. During this time we have visited and collected in fifteen islands of the group, and these the largest and most important. I am satisfied that the study of our collections with the aid of the libraries and collections at home, will only strengthen the conclusions of this paper. It may be necessary to make the so-called western sub-province of more importance in the arrangement, but the non-existence in nature of exactly equivalent divisions of any kind is well recognized.

It is hoped that our work may aid in untangling some of those puzzles in which students of Philippine zoology have found themselves involved, and that it will also add considerably to the sum of knowledge concerning this, as yet, imperfectly known corner of the earth.

Manilla, July 2, 1888. J. B. Steere.

BAROMETRIC OSCILLATIONS.

The following account of what appears to have been the passing of H.M. surveying-ship *Egeria* through the embryo of a cyclonic disturbance, has been received from Captain Aldrich, of that ship.

Admiralty, August 1. W. J. L. Wharton.

H.M.S. "Egeria," at sea, June 6, 1888.

I send the following extract from my journal, which may possibly be of interest to meteorologists:—

"*May* 31.— . . . There has been a swell from the south-west during the day. The lower clouds come from the eastward, while the upper ones are from the westward. This appears to be a common occurrence in this locality.

"♀ *June* 1.—Weather cloudy all night, and wind-force 2·3, gradually veering, till at 3.30 a.m. it was to the northward of east. Barometer rising slowly. At 6 a.m. the wind shifted to the north-east in a rain-squall; nimbus, and a generally dark appearance in the sky. At 7 a.m. the officer of the watch sent down to tell me the barometer had fallen 0·12 of an inch in the previous hour. I was about to commence dressing at the time, but, hurrying on my things, I looked at the aneroid in my fore-cabin, and found the report correct. I immediately reset the aneroid and went on deck, and although there were no signs of any forthcoming disturbance, the light sails and mainsail were taken in. At 7.20 I had the barometer again read, when it was reported to have risen nearly $\frac{1}{10}$ inch in the twenty minutes. I went down immediately, and found by the aneroid this jump had taken place. During this time there was no change in the weather, though the wind drew to the north-north-east."

Now there is no doubt whatever that the barometer went up 9/100 in twenty minutes. Of course, it cannot be known to an hour when it previously dropped ·12, as the instrument was not read between 6 a.m. and 7 a.m., and the drop may possibly have been greater even, and also *may* have taken place as suddenly as it rose afterwards. There is no doubt that some extraordinary disturbance of the atmosphere took place, though beyond the foregoing observations we neither saw nor experienced anything of it. The following are the actual readings of the mercurial barometer:—

a.m.		Inches.	Position.
6	...	30·170	Lat. 24·04 S.
7	...	30·050	Long. 179·04 W.
7·20	...	30·144	
7·30	...	30·154	
7·45	...	30·186	
8	...	30·186	
9	...	30·200	

Pelham Aldrich.

NOTES.

The following is the list of names recommended by the President and Council of the Royal Society for election into the Council for the year 1889, at the forthcoming anniversary meeting on the 30th inst.:—President: Prof. George Gabriel Stokes. Treasurer: Dr. John Evans. Secretaries: Prof. Michael Foster and Lord Rayleigh. Foreign Secretary: Prof. Alexander William Williamson. Other Members of the Council: Prof. Henry Edward Armstrong, Henry Bowman Brady, Charles Baron Clarke, Dr. William Huggins, John Whitaker Hulke, Prof. John W. Judd, Dr. Edward Emanuel Klein, Prof. E. Ray Lankester, Prof. Herbert McLeod, Sir James Paget, Bart., William Pole, William Henry Preece, Sir Henry E. Roscoe, Dr. Edward John Routh, Prof. Arthur William Rücker, and Captain William James Lloyd Wharton, R.N.

The Pasteur Institute, Paris, is to be opened on the 13th inst., in presence of numerous delegates of the French Academies of Science and of Medicine, and of the Medical and Scientific Faculties. President Carnot will perhaps be present.

We regret to announce the death of the well-known geologist, Dr. Theodor Kjerulf, Professor at the University of Christiania, and Director of the Geological Survey of Norway. He died at Christiania on October 25, at the age of sixty-three. He received his appointment as Professor in 1858, and since that time has made many important contributions to geological science.

The death is announced of Herr Johann Kriesch, Professor of Zoology and Prorector of the Royal Joseph Polytechnic at Budapest.

The first wing of the Durham College of Science, Newcastle, was opened by the Princess Louise on Monday. The plans for the structure as a whole are very elaborate, and it is expected that the building, when completed, will be a great ornament to Newcastle. The wing just opened is about a third of the College, and has cost £23,000. The remainder will be built when the necessary funds are raised. Many of those who took part in the opening ceremony afterwards met at luncheon. Mr. John Morley, responding for the House of Commons, referred to the number of eminent men of science now in Parliament. Touching on the question how far Parliament may be expected in future to sanction expenditure for the promotion of such objects as the Durham College of Science has been founded to maintain, Mr. Morley said that the House of Commons would be willing to sanction grants from the public purse for objects of this kind in proportion to one thing, and that was to the evidence that could be brought before them that in localities an effort had been made to raise as abundant funds as these localities could provide.

H.M. surveying-ship *Egeria*, under the command of Captain P. Aldrich, R.N., has, during a recent sounding cruise and search for reported banks to the south of the Friendly Islands, obtained two very deep soundings, of 4295 fathoms and 4430 fathoms (equal to 5 English miles) respectively; the latter in latitude 24° 37′ S., longitude 175° 8′ W.; the other about 12 miles to the southward. These depths are more than 1000 fathoms greater than any before obtained in the southern hemisphere, and are only surpassed, as far as is yet known, in three spots in the world—one off the north-east coast of Japan, of 4655 fathoms, found by the United States s.s. *Tuscarora;* one of 4475 fathoms, south of the Ladrone Islands, by the *Challenger;* and one of 4561 fathoms, north of Porto Rico, by the United States ship *Blake*. Captain Aldrich's soundings were obtained with a Lucas sounding-machine and galvanized wire. The deeper one occupied three hours, and was obtained in a considerably confused sea, a specimen of the bottom being successfully recovered. Temperature of the bottom, 33°·7 F.

It appears from the Annual Report of the Société des Naturalistes de Moscou, which was read at its annual meeting on October 15, that the Society now has 535 members. During the past year the Society sent out MM. Zarudnyi, Litvinoff, Lorentz, Milutin, Kosmovsky, Golenkin, and Rostovtseff for the exploration of the Transcaspian region and the Caucasus, as well as for zoological and botanical explorations in several provinces of Central Russia. Besides its *Bulletin*, the Society has brought out a new instalment of its *Mémoires*.

The courses of lectures at the Tomsk University were opened on September 13. There are already sixty-nine students, all Siberians.

Notwithstanding the considerable difficulties which have been met with in the digging of a canal to connect the Obi with the Yenisei, and the want of money for the completion of the undertaking, the work of connecting the two great arteries of navigation in Siberia is still advancing. In the summer of the present year a boat 56 feet long and 14 feet wide, taking 3½ feet of water, was drawn from the Obi into the Yenisei with a load of 40 tons of flour. The two rivers are 630 miles apart.

On October 17, 1887, Mr. William Colenso, F.R.S., read before the Hawke's Bay Philosophical Institute a "Jubilee paper," entitled "Fifty Years Ago in New Zealand." This paper has now been published. It contains, among other interesting records, an excellent account of the introduction of the printing-press into New Zealand, and of the printing of the New Testament in the Maori language in 1837. Recalling the events of his life during his long residence in New Zealand, Mr. Colenso refers to December 25, 1835, when he met Darwin in the Bay of Islands, and spent with him "a happy long day."

The atomic weight of tin has been redetermined by Prof. Classen and Dr. Bongartz, of Aix-la-Chapelle. Four distinct series of determinations have been made, including in all no less than forty-seven separate estimations. The accuracy of the work may be judged from the fact that the difference between the highest and lowest values obtained is no more than 0·4. The first series consisted in oxidizing pure tin to stannic oxide, and thus determining the ratio $Sn : O_2$. The purest commercial tin was taken as the starting-point, and the 0·5 per cent. of impurities removed by the following process. It was first converted to stannic chloride, $SnCl_4$, by the action of dry chlorine gas; the chloride was next fractionally distilled, and a portion eventually obtained boiling constantly at 120° C. This was diluted with water, and treated with solution of sodium sulphide until the precipitated sulphide of tin redissolved; a quantity of caustic soda solution was then added, and the liquid allowed to stand for a few days. It was subsequently submitted to electrolysis in weighed platinum dishes, upon the interior surface of which the tin was deposited as a beautiful silver-white metal. The tin obtained in this manner was exceedingly pure, and eminently suitable for use in atomic weight determinations. Weighed quantities of it were, in the first series of experiments, oxidized with redistilled nitric acid; the excess of acid was expelled upon a water-bath, and the residual stannic oxide first gently ignited over a small flame, and finally more strongly heated in a muffle furnace. The mean atomic weight derived from eleven such experiments is 118·76, a value considerably higher than the usually accepted one, 117·8, based upon Dumas's redetermination in 1858. In the second series the ratio of $Sn : Cl_4 + 2NH_4Cl$ was estimated, as given by electrolysis of the double chloride of tin and ammonium, $SnCl_4 . 2NH_4Cl$. Pure stannous chloride prepared as above was readily converted into this double salt which was obtained in fine crystals. Weighed quantities were dissolved in solution of ammonium oxalate and submitted to electrolysis, the tin being again deposited, washed, dried, and weighed. Sixteen such estimations give the mean value 118·81. The third series were precisely analogous, the double chloride of tin and potassium being employed; the mean of ten determinations affords the number 118·80. In the fourth series pure tetrabromide of tin was electrolyzed in presence of ammonium oxalate and oxalic acid, and the ratio $Sn : Br_4$ thus arrived at. The mean result of ten experiments in this series is 118·73. Finally, the mean value deduced from the whole forty-seven experiments is 118·77, or in round numbers 118·8, oxygen being taken at Stas's value, 15·96. If oxygen be 16, tin becomes slightly less than 119·1. This important metal may therefore be added to the interesting list of those whose atomic weights are probably whole numbers.

Mr. G. V. Hudson notes in the current number of the *Entomologist* that on March 7 he observed the largest assemblage of moths he has ever seen in New Zealand. They were flying round an electric light suspended from the yard-arm of the steamship *Aorangi*, at the wharf in Wellington Harbour. He thinks that at a moderate computation there were over three hundred specimens. He could not capture any, owing to the great height of the light; but they appeared to be chiefly *Mamestra composita* and *Porina signata*. Mr. Hudson points to this as a good instance of the efficiency of the electric light in attracting insects. He has found that an ordinary lamp will not attract more than a dozen or twenty specimens, even under the most favourable circumstances.

In the current number of the *Zoologist* Mr. John Cordeaux has some valuable notes on the occurrence of Pallas's sand grouse in Lincolnshire. Exclusive of the flocks seen near the coast late in August and in September and October, which may probably be referred to birds coming from the interior, and approaching the sea before taking their departure, the number actually recorded as visiting Lincolnshire is, as far as Mr. Cordeaux is able to ascertain, about 184. Making a liberal allowance for flocks seen more than once, he thinks the number may certainly be estimated as considerably exceeding a hundred. Taking the dates as they occur, the number in each flock, and the localities in which the birds have been seen, he is inclined to place the actual number at about 140 to 150 between May 18 and July 28. The number killed was twenty-five, of which sixteen were shot, eight died of poisoned grain, and one was killed on the railway. Mr. Cordeaux has no information which indicates that any sand grouse nested, or attempted to nest, anywhere in Lincolnshire.

The current number (vol. xvi. Part 2) of the Transactions of the Asiatic Society of Japan contains a number of specimens of Aino folk-lore translated literally by Mr. Batchelor, whose name is already known to our readers in connection with Aino studies. Mr. Meik, a civil engineer, employed by the Japanese Government to travel round the Island of Yezo to advise as to the most suitable sites for the construction of harbours, describes his journey. He draws attention to the diurnal inequality of the tides on the Yezo coasts. This amounts to 3 feet at spring-tides along the south-east coast, the maximum rise of a spring-tide being 6 feet, while the range of an ordinary spring-tide is about 4½ feet. The lowest tide at new and full moon occurs about 10 a.m., and the second daily tide reaches a minimum about three days and a half before new and full moon, or at the change of tides. On the south-east coast this minimum afternoon tide occurs about 6 p.m., and only registers a few inches, while on the west coast there is practically only one tide in the twenty-four hours for four days before and one day after new and full moons, and during this period the tide takes sixteen hours to rise and eight to fall. Mr. Parker discourses in his usual very learned way on the Chinese and Annamese languages.

At a recent meeting of the Society of Science of Christiania, Prof. G. Storm demonstrated the identity between Ginnunga Gap, referred to in the *Sagas*, and meaning the "World's End," and the present Davis Straits.

The first discovery of remains of cave-dwellers in Scandinavia has been made in a cave in the Great Carl's Island, in the Baltic, a couple of miles west of the Island of Gothland. Last year a farmer, while digging for mould for a plantation, discovered in a cave or grotto layers of ashes and charcoal mixed with bones. The latter, having been forwarded to the Royal Museum at Stockholm, were found to be the bones of horses, bullocks, pigs, birds, and fishes. In consequence of this discovery, Prof. G. Lindström commissioned Dr. L. Kolmodin to carry out excavations in this cave in a scientific manner; and the result is that indubitable remains of cave-dwellers have been found. The cave is situated about 20 metres above the sea-level, and consists of two parts, an outer one, about 12 metres long and 7 metres wide at the mouth, and an inner one, about 9 metres long and 1½ metre wide; the latter leading into a transverse gallery running south-west and north-east. Dr. Kolmodin began by excavating the layers at the mouth of the cave, and here he encountered, almost in the exact spot where the fire-place had been, a grave 5 metres in length, 2½ metres in width, and 3·2 metres in depth. There are alternate layers of ashes and charcoal, interspersed with remains of the animals named above. The bones of "domestic" animals decrease in quantity downwards, whilst those of seals increase. The explorer found, at a depth of 24 decimetres, fragments of coarse pottery of a primitive kind and some chips of flint; at a depth of 28 decimetres an implement of flint; and in the lowest layer, at 32 decimetres depth, two small drills of bone. Several of the fragments of pottery found below a depth of 24 decimetres bore traces of simple ornamentation. Everywhere in the layers were found bits of granite and chalk, clearly showing that they had been split by fire. Most of the bones had been split or crushed, and the marrow extracted. Among the remains was part of a human cranium. It may be added that the island on which the discovery was made is only a couple of hundred acres in extent, and uninhabited.

The Pekin correspondent of a Shanghai newspaper writes that a special edition of a work on natural philosophy, compiled by Dr. Martin, the head of the Foreign College of Pekin, has been prepared for the use of the Emperor of China, and that sixteen volumes of Macmillan's Science Primers have been translated into Chinese by Dr. Edkins, the well-known scholar, at the instance of Sir Robert Hart, the Inspector-General of Chinese Customs. "These elementary books will supply a want felt in the preparatory science schools which are now being inaugurated, especially in Tientsin. Excellent prefaces to the series, inculcating the advantages of a scientific training, praising the advance made in science in the West, and the valuable contribution or legacy which Sir Robert Hart, amid all his other work for the regeneration of China, is leaving, have been written by the two foremost statesmen in China—the Viceroy, Li Hung Chang, and the Marquis Tseng."

The ninth monthly part of "The Cyclopædia of Education" (Sonnenschein) has been issued. The work will be completed in about twelve parts.

Dr. A. B. Griffiths has in the press "A Treatise on Manures," which will be published by Messrs. Whittaker and Co., of Paternoster Square.

Great pains are taken to secure that the penny science lectures at the Royal Victoria Hall shall be attractive and successful. On November 6, Mr. W. Lant Carpenter delivered a lecture on "Speech-Recording Machines." The following are the announcements for the remainder of the present month: November 13, Mr. Harold Cox, "India"; November 20, Dr. W. D. Halliburton, "The Throat and the Voice"; November 27, Prof. H. G. Seeley, "Underground Heat."

Since September last a system of storm-warnings has been in use on the coasts of the Black Sea; they are issued from the Odessa Meteorological Station in connection with the Central Physical Observatory at St. Petersburg. Signals announcing the approach of strong north-eastern and south-western winds, as well as of storms, are shown at Odessa, Sebastopol, Kertch, Taganrog, Rostoff, Poti, and Batum. The signals are the usual cones and cylinders.

In the Jamaica Weather Report for the month of August, Mr. Maxwell Hall gives an interesting account of the more prominent features of some of the West Indian cyclones observed there during the last ten or twelve years. These hurricanes usually originate in the regions of heavy rains which advance as far north as latitude 15° in August and somewhat farther north in September and October. From November to July the rains withdraw nearer the equator, where the divergence of the air-currents is insufficient for their generation. All the cyclones which have passed Jamaica confirm the theory of the influx of the wind towards the centre. Mr. Hall states that there is a feature often observed in Jamaica which is not noticed elsewhere, viz. after a cyclone has passed, and is moving away, it draws the winds and clouds after it for one or two days, and that this fact enables him to draw conclusions as to the direction in which the cyclone is moving.

The thirteenth yearly Report of the Forest Meteorological Stations of the German Empire, for the year 1887, published by Dr. A. Müttrich, contains monthly and yearly results for sixteen stations. The temperature and humidity are observed in the open country, in the forests, and in the crowns of the trees. The Report contains, besides, other data of interest, such as evaporation and rainfall, and the dates of first and last frosts.

In a lecture delivered at Trevandrum by Lieut. Harold Ferguson, and reproduced in the *Madras Mail*, on "Some Popular Errors about Snakes," poisonous snakes are divided into three classes: (1) sea-snakes; (2) viperine snakes; and (3) poisonous colubrine snakes. All members of the first class are poisonous. The second class have flat triangular heads, and may be subdivided into pit vipers and true vipers. The true vipers are recognizable by having scales and not shields on the head, and the pit vipers by a deep depression between the eye and nostril. It is not easy to distinguish the third class at first sight from the harmless snakes, but it is an unfailing sign that the latter are covered on the head with large flat scales, which are absent from the head of poisonous colubrine snakes. With regard to Southern India, the poisonous snakes are not numerous. The largest is the dreaded hamadryad (*Ophiophagus elaps*), which is very rare. Other poisonous snakes found in that region are the cobra, the bungarus or krait, the callophis (four species), two species of *Trimeresurus*, *Daboia elegans*, and *Echis carinata*. In all there are about twelve species of poisonous snakes, five of which inhabit the low country—namely, the cobra, the two species of bungarus, the daboia, and the echis; the others are met with only in the hills.

The British Vice-Consul at Candia, in Valencia, in a recent report on the agriculture of his district, refers to the insect pests of that province. He says that almost all men and boys there are fond of shooting, and they ruthlessly slaughter the small insectivorous birds. The result is, of course, disastrous to the farmers. The apple-trees in the district have been almost all destroyed by a worm called locally "*bañarriquer*," which eats its way into the trunks of the trees, and then spins a thick cobweb over the branches. The eggs, which number from thirty to fifty in each nest, are easily found; but this is rarely, if ever, done. Strange to say, the worm confines its attention to apple-trees; other fruit-trees flourish there. At Lucerne, in the same district, two species of insect pests are found, both caterpillars—*oruga verde* and *gusaro negro*. The latter is difficult to deal with, as it burrows under the roots of plants, but the former is easily swept off the leaves by a net. The pea crop is attacked by the *cadell*, a worm, and the *blanqueta*, an aphis. To complete a list of the ills from which agriculture suffers in that region, mildew has this year attacked the vine.

The *Journal de la Chambre de Commerce de Constantinople* states that a method of solidifying petroleum has just been discovered. A small quantity of soap is added, and the mixture is heated. When the mixture is allowed to cool, the product can be cut into small cubes like those of compressed charcoal. Thus petroleum can be used as a combustible, it being now easy to transport and manipulate it.

The additions to the Zoological Society's Gardens during the past week include a Bonnet Monkey (*Macacus sinicus* ♀) from India, presented by Miss D. Hughes; a Vervet Monkey (*Cercopithecus lalandii* ♂) from West Africa, presented by Miss Helena Blow; a Common Genet (*Genetta vulgaris*) from Andalusia, presented by Lord Lilford, F.Z.S.; a —— Fox (*Canis* ——) from India, presented by Colonel Sir Oliver B. C. St. John, K.C.S.I., F.Z.S.; an Axis Deer (*Cervus axis* ♀) from India, presented by Captain W. Miller; two Hobbies (*Falco subbuteo*) from France, presented by M. P. A. Pichot; a Peregrine Falcon (*Falco peregrinus*), captured at sea, off the coast of Florida, presented by Captain J. Smith; a Knot (*Tringa canutus*), British, presented by Mr. C. Whymper, F.Z.S.; a Pallas's Sand-Grouse (*Syrrhaptes paradoxus*) from Fifeshire, N.B., presented by Mr. John Duncan; an Egyptian Vulture (*Neophron percnopterus*) from North Africa, presented by Captain A. Kent; a Polar Bear (*Ursus maritimus*) from the Arctic Regions, a Ruffed Lemur (*Lemur varius*) from Madagascar, a Yak (*Poëphagus grunniens* ♀) from Tibet, deposited; a Blue Jay (*Cyanocitta cristata*) from North America, purchased; a Crested Pigeon (*Ocyphaps lophotes*), a Bolle's Pigeon (*Columba bollii*), bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

Observation of Faint Minima of Variables.—Mr. S. C. Chandler has followed his Catalogue of Variable Stars by another much-needed piece of work. Pointing out how deplorably deficient is our knowledge of the light-changes of such variables as become too faint for ordinary telescopes to follow them, he strongly urges (*Astr. Journal*, No. 183) upon the possessors of the great modern refractors that they could not better employ their high optical powers than in this neglected field. And in order to afford the greatest possible inducement for them to undertake such a research, or at all events to remove as many hindrances out of their way as possible, he has supplied the data necessary for identification for some sixty-nine or seventy stars, the minimum for which is fainter than the 12th magnitude, together with a hypothetical ephemeris for the time of minimum for those stars which are likely to pass through that phase during the next fourteen months. The time of minimum has been assumed to precede that of maximum by 0·45 of the period. Mr. Chandler believes that he has discovered a curious relation between the form of the light-curve and the period. He does not, however, give this relation, but expects that the minima will fall earlier than predicted for stars with periods of from five to ten months or longer than thirteen months, but that in stars with periods from ten to thirteen months the minima will probably fall a little late. Argelander's method of observation is recommended.

Oxygen Lines in the Solar Spectrum.—M. Janssen has made a very toilsome, not to say somewhat dangerous, expedition in order to determine whether the groups of lines seen in the solar spectrum, and which he had shown to belong to oxygen, were wholly due to the influence of our atmosphere, or partly due to the absorption of oxygen in that of the sun. He therefore resolved to ascend Mont Blanc at a late period in the season, when the cold would be sufficiently intense to secure the absence of any appreciable amount of water vapour from the atmosphere. The station chosen was that of Les Grands Mulets, on account of the cabin there, which would afford shelter to the observers during the period that it might be necessary to continue the observations. The ascent was made on October 13, and the following day was devoted to the adjustment of the instruments. October 15 and 16 were most fortunately very fine days, and the observations were made under the most favourable conditions. The result was to show that both the bands and lines of oxygen, as identified by M. Janssen in the solar spectrum by his previous experiments, are due entirely to the earth's atmosphere. The system of bands—those in the red, in the yellow, and the blue, the intensity of which varied with the square of the density of the absorbing oxygen—was altogether wanting, and the groups of dark lines, viz. A, B, and α, which M. Janssen had found, in the experiments above referred to, to vary as the simple density, were so much enfeebled as to leave little doubt but that they, too, would disappear could we wholly eliminate the influence of our atmosphere. Of course this result does not prove the absence of oxygen from the sun, but merely that it does not show its presence by the same characteristic bands and groups of lines as it does in the case of our own atmosphere.

New Minor Planets.—Herr Palisa has discovered three new minor planets, No. 279 on October 25, No. 280 on October 29, and No. 281 on October 31. Of these No. 279 may possibly prove to be Medusa, No. 149; and No. 280 was at first thought to be Oppavia, No. 255, but is more probably a new planet.